Rainwater Harvesting 101

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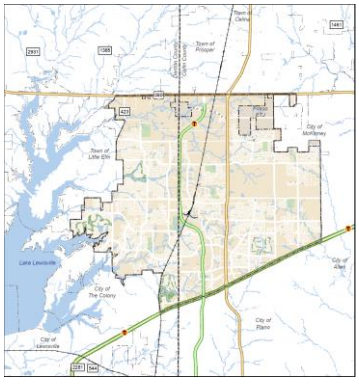
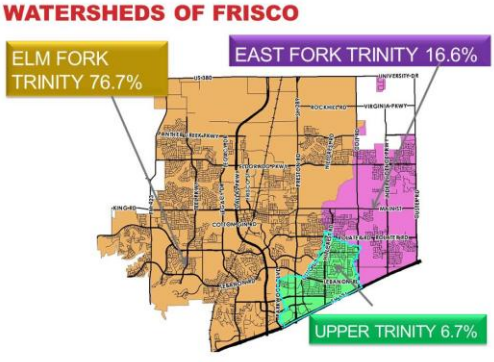
Rainwater Harvesting: More than Just Barrels!

- Independent collection of rainwater that allows you to store water for your lawn and garden while preventing excess stormwater runoff
  - Free source of irrigation water during times of drought
- Not typically for drinking water
  - Large-scale uses with treatment could potentially provide drinking water
- Collection reduces pressure on our stormwater drainage and municipal water system

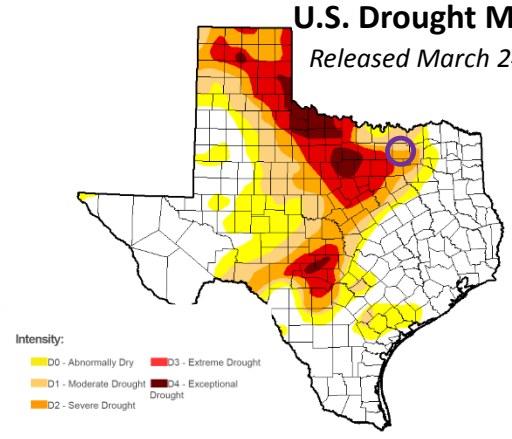
Frisco, TX





U.S. Drought Monitor

Released March 24, 2015



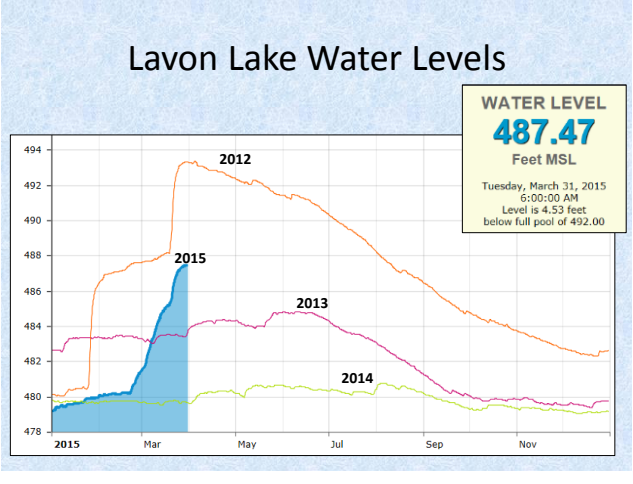
North Texas Municipal Water District

Service Area

- 1.7 million people
- 49 Customer Cities, Towns, and Water Supply Corporations
- 13 Member Cities
  - Allen, Farmersville, Forney, Frisco, Garland, McKinney, Mesquite, Plano, Princeton, Richardson, Rockwall, Royse City, Wylie

Water Supply Reservoirs

Lavon Lake Water Levels



Stormwater 101

- Run off from rain, snowmelt or sprinkler systems from impervious surfaces
- Carries pollution, (litter, pet waste, toxic chemical fertilizers & pesticides) into lakes, creeks and streams
- Pollution in stormwater is NOT treated!

How Does Catchment Help Protect Our Water Supply?

- Catches "first flush" of water
  - Dirt on roof tops, dried oil on streets, etc
- Reduces erosion
  - Saves $$ in costly foundation repairs
- Recharges aquifers
  - Prevents regional subsidence protects groundwater resources

Rainwater Harvesting

- Benefits
  - pH neutral
  - No salt, "hard water" minerals or chemicals typically found in tap water
  - Reduces spending on household potable water use
  - Water conservation
  - Reduces flooding, erosion and water pollution

Types of Rainwater Harvesting

- Collection
  - Large scale
    - Cisterns
  - Small scale
    - Rain barrels
    - Rainwater pillows
- Retention
  - Rain gardens

Cisterns and Rain Barrels

- Cisterns
  - Historically underground structures holding large quantities of rainwater
  - Can be as large as 10,000 gallons
  - Potential for potable use with installed treatment systems

- Rain Barrels
  - Generally less than 200 gallons – most hold between 50-75 gallons.
  - **Non-potable**: not for drinking or cooking
  - Easy to install and move around your home

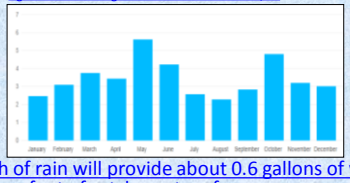
Rain Gardens

- Landscape features that collect and store rainwater runoff
  - Allows rainwater to percolate into the ground
  - Reduces stormwater runoff and pollution

- In Texas, typically mulched and planted with deep-rooted native plants & grasses
- Can be used in conjunction with permeable paving to improve stormwater infiltration

Some Math, Or: How much water can I capture?

Figure 1. 2013 Average Rainfall in inches for Frisco, TX



Frisco historical average rainfall = 41.23 inches

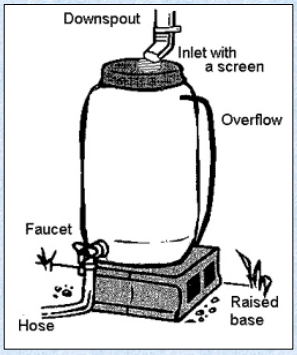
- One inch of rain will provide about 0.6 gallons of water per square foot of catchment surface
  - One quarter inch of rain would yield 0.15 gallons per square foot
- Catchment surface is typically ¼ the size of the house
- Ex: 2,000 sq foot home
- 2,000 sq ft (1/4) = 500 sq ft
- 500 sq ft X 0.6 gal/sq foot = 300 gallons per inch of rain

Rain Barrels - Installation

- Ivy rain barrels are easy to assemble and install and include a step-by-step installation video that can be accessed online

Installation: with Gutters

1. Consider location – level ground for base
2. Build up base fooprint so you can easily get to spigot (24 x 24 inches for Ivy). Keep in mind how much it will weigh when full when choosing your base materials!
3. Remove elbow from downspout
4. Place barrel on base and measure on downspout where elbow will attach (allow 1 ¼ – 2 inches)
5. Put some cardboard behind the gutter to protect your home exterior, cut downspout at measured location using a hacksaw
6. Reattach elbow to downspout using screws (or solvent if your gutters are PVC)
7. Ensure downspout elbow directs water to barrel
8. Ensure overflow hose is directed away from foundation



Installation: without gutters

- Not too common in our area
- Identify areas where water drips from your roof
- Consider proximity for use, then build your level base

Rain Chains

Multiple Barrels

- Increase storage capacity by connecting multiple barrels at the overflow port
- Build your base accordingly
- Connection at top
  - One barrel will fill first, then overflow into the second barrel
- Connection at bottom
  - Both barrels will fill simultaneously

How can I use the water?

- **Non-potable** (meaning, don't drink it!)
- Easiest method – use a watering can to hand water plants or bird baths
- Wash patio doors or windows
- Attach a hose to spigot for watering plants
- Low pressure
  - Not generally suitable for soaker hoses, etc.

How does the water flow?

- Force of gravity
- The more elevated the barrel, the more water pressure
  - Keep safety in mind
- Consider distance of your garden from chosen location of barrel
- Pressure won't be like turning on your faucet!
  - If you plan to set up a soaker hose or drip emitter, install where water flows downhill
  - Cannot transport water in large quantities to a level higher than the rain barrel

If you're picturing this…

Pumps

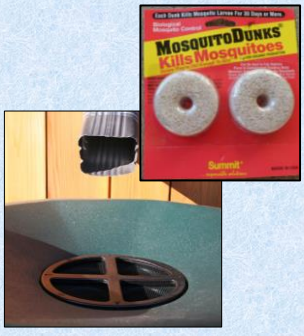
- Either connect through top, or via hose bib/spigot
  - Plug-in or solar-powered options
- A 1/8 HP internal pump can provide pressure up to 10 psi
- Submersible solar-powered pumps with intake hose provide about 13 psi
- Larger set-ups are available but may require storage

Maintaining a rain barrel

- Keep lid locked
- Clear debris from gutters, downspout and screen on a regular basis
- At least once a year, empty and wash out the barrel
  - Pressure wash or clean inside with brush and fresh water
- Check seal around barrel hose bib
  - Apply caulking if leaks are spotted
- If you move to colder areas, consider winterization

Mosquitoes

- Ivy is equipped with a mosquito-proof screen and screen ring
  - Mosquitoes can enter any opening larger than window screening
  - They can't get in the barrel to lay eggs unless the water has flooded over the top
- Splash off water that has collected on top of the barrel
- Make sure all openings including overflow and screen are covered



Other Safety Considerations

- 50-gallon Ivy rain barrels weigh over 420 pounds when full. Make sure your base can withstand the weight of a full barrel!
- While raising the barrel improves water pressure, it can create a tipping hazard
- Secure barrel and lid to keep children and animals safe.
- Attach a sign to let people know the water is not safe to drink.

Rainwater Harvesting and Homeowners Associations

- Texas State Law currently prohibits HOAs from outlawing drought-tolerant landscaping, rain collection or composting, but can regulate the location and color of those systems.
  - For more info, see Texas House Bill 3391, Prop Code Chapter 202

How to "hide" your rain barrel

- Check for local HOA regulations – yours may require you to locate rain barrels in backyards or unobtrusive areas
- Choose a location around eaves or corners of your house
- Enclosures
  - Fencing, screens or lattices
- Concealing landscaping
  - Shrubs can absorb excess rainfall from barrel's overflow hose

Decoration Ideas

- Pinterest!
- Acrylic and krylon paint work well
  - Make sure to prime first

Final Tips

- Make sure to build a sturdy base for your barrel.
  - It will be hard to move when full!
- Locate the barrel close to where you will use the water.
- Check on rain barrels periodically during rain events to make sure it is filling.

Want to Learn More?

- **More online resources:**
  - TCEQ page including a downloadable PDF Guide: http://www.tceq.state.tx.us/drinkingwater/rainwater.html
- Texas AgriLife Extension has several resources, including workshops for making a rain barrels, and suggested plant lists for rain gardens: http://rainwaterharvesting.tamu.edu/ https://dallas.tamu.edu/courses/ http://rainwaterharvesting.tamu.edu/files/2011/05/Rain-Garden-Plant-List-11-02-09.pdf
- Rainwater Solutions Installation Video: http://rainbarrelprogram.org/frisco
- Texas Water Development Board Water for Texas: http://www.twdb.texas.gov/publications/shells/RainwaterHarvesting.pdf
- Texas SmartScape utilizes xeriscape principles, but goes beyond the basics by providing design, care and plant search tools that are "smart" for North Central Texas http://www.txsmartscape.com/

Rain Barrel Sale

Visit our program website at
http://rainbarrelprogram.org/frisco
Cost $67 or two barrels for $130
Order online anytime before **11:00 p.m., Sunday, April 26th**

Drive-Thru Pick-up Event:
SATURDAY MAY 2ND
9:00 a.m – 11:00 a.m
Frisco Public Works
Parking Lot
11300 Research Road
Frisco, TX 75033

**The City of Frisco does not currently offer a rebate for the rain barrel program.

Thank you for attending!

Questions?

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